

Review of Kimley Horn Traffic Impact Study Report

One Westfield Place

By

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Comments, *Questions:*

Page 6 – List of 17 Intersections Studied

Why was the South Avenue signalized intersection with Westfield Avenue not included?

Page 10 – FUTURE BACKGROUND TRAFFIC, Background Area Growth

“A compounded annual growth rate (CAGR) of .26 percent (0.26%) per year between 2021 and 2027 or 2022 and 2027 was applied to the existing traffic volumes.”

At the November 28, 2022 meeting with HBC Streetworks and Kimley Horn’s traffic engineers to discuss the One Westfield Place Traffic Impact Study, Mr. John Canning of KM advised that they had used an annual background traffic growth of 0.75%.

A compounded annual growth rate of .26% over five years results in a 1.3 percent increase.

A compounded annual growth rate of 0.75% over five years results in a 3.8 percent increase, a difference of 2.5%.

Which of these background traffic growth rates was actually used?

Page 15 – Trip Generation, Multimodal Reduction

The ITE Trip Generation Manual, 11th edition and NJDOT’s Highway Access Permit System (HAPS) were cited as the sources for calculating peak hour vehicle trip generation rates for the proposed development’s residential, office, and retail land uses. Multimodal reduction factors for these peak hour vehicle trips in transit-oriented “Nodes” were cited.

Were these trip generation rates and reduction factors compared with actual values for existing peak hour vehicle trips in comparable developments during AM and PM peak hours in order to reflect local conditions?

Page 22 – CAPACITY ANALYSIS

Level of Service (LOS) analyses were performed by K & H using Highway Capacity Manual (HCM) 6th edition methodologies with the Synchro 11 and SIDRA roundabout software computer programs. K & H explains the term Level of Service, used by traffic engineers as a “simple A-F

system representative of travelers' perceptions of the quality of service provided by a facility or service".

Report Tables 5 and 6, page 23, present the range of average vehicle delays in seconds corresponding to each Level of Service for unsignalized and signalized intersection approaches.

LOS's of D and E are characterized as "Moderate Delays", while LOS F, over 50 seconds per vehicle for unsignalized intersections and over 80 seconds for signalized intersections results in "Long Delays."

On page 24, third paragraph, K&H note that the Town of Westfield's June 2021 ULUC Appendix A states that "an intersection with an overall LOS D or lower is generally considered as operating acceptably..."

The report concludes this paragraph by noting "Furthermore, there is growing recognition that a certain level of congestion is acceptable, particularly in vibrant transit-friendly communities, and that congestion mitigation must be balanced with Westfield's other multimodal travel and community goals."

The LOS analyses results, provided in the report's extensive Appendix Tables, presented the computer models' estimates of each intersection's approach average vehicle delays, queue lengths, and LOS's during weekday and Saturday peak hours for the 2022 existing traffic volume conditions and forecast 2027 "No-Build with Lord & Taylor Site Retail", 2027 "Build with No Mitigation", and 2027 "Build with Mitigation" traffic volumes. Traffic signal cycle lengths were not changed at existing signalized intersections for the initial 2027 mitigation analyses but were modified for the 2027 mitigation alternatives analyzed at the North and South Avenue intersections with Central Avenue.

Were field travel time and delay surveys conducted at key project area intersection approaches during these peak hours to calibrate the Synchro and SIDRA models as to average approach delays and queue lengths?

Page 45 – CONCLUSIONS AND RECOMMENDATIONS

The Town's desire to create a more pedestrian/bicycle-friendly downtown is noted in paragraph three.

There is no mention in the report of individual critical crosswalk location pedestrian volume and Levels of Service analyses. For example, how many AM and PM peak hour pedestrian movements to and from the proposed redeveloped Lord & Taylor site can be estimated under 2027 "Build" conditions long the North Avenue route to the Westfield Train Station? Pedestrian and bicycle accident data at critical intersection locations are not included in the report. What would the resulting pedestrian LOS's be at the critical intersection crosswalks identified in the report after the proposed mitigation steps?

I have suggested to the HBCI Streetworks and K&H consultants at the November 28th meeting that discussions be held with NJ Transit to investigate the feasibility of creating safe pedestrian/bicycle grade separated paths along the vacant railroad rights-of-way north and south of the existing two-tracks of the Raritan Valley Line. The third and fourth tracks along this section of the railroad line were removed many years ago.

Pages 235 – 810 - APPENDIX F TABLES, Intersection Capacity Analyses Worksheets

I prepared the attached table, “Critical Intersection Approach Traffic Measures of Effectiveness, 2022 Existing & 2027 No-Build & Build Conditions”, comprised of eight of the seventeen intersections covered in the K & H traffic study report.

These intersections are:

No. 2 - West Broad Street & South Avenue

No. 3 – South Avenue to North Avenue Roundabout

No. 7 – South Avenue & Central Avenue

No. 9 – North Avenue & Clark Street

No. 11 – East Broad Street & North Avenue

No. 13 – North Avenue & Central Avenue

No. 14 – East Broad Street & Prospect Street

No. 17 – East Broad Street & Mountain Avenue

I selected a critical approach or approaches based upon the highest approach traffic volumes at each intersection and tabulated the worksheet values for weekday AM and PM peak hour traffic volumes (vehicles per hour), Levels of Service (LOS), and the traffic signal cycle lengths in seconds. I color coded in yellow the approaches with LOS's at E and F. I also color coded in green the approaches which improved after mitigation.

Note that the total “critical” approach traffic volumes at these eight intersections were estimated to increase by 8 percent during AM peak hours and by 12 percent during PM peak hours between 2022 and the 2027 “Build” condition. Or, numerically, by 209 and 404 vehicles per hour, respectively.

If the background annual traffic growth of 0.75 percent had been used instead of the report's stated 0.26 percent, an additional 70 vehicles/hour would arrive at these intersection approaches in the AM and PM peak hours.

I did not include the intersections along South Avenue west of Ross Place to Summit Avenue or North Avenue at Elm Street in this table but will cover this subsequently under “**Road Diet**”.

As can be seen in this table, the Roundabout's South Avenue eastbound and East Broad Street / Mountain Avenue eastbound left turn approaches are at LOS's E and F during most existing and forecast 2027 peak hours.

The westbound Mountain Avenue thru lane approach is at LOS E during all PM peak hours analyzed.

Where mitigations are proposed at the Roundabout, North Avenue / Clark Street, North Avenue / Central Avenue, South Avenue / Central Avenue, and East Broad Street / Prospect Street intersections, LOS improvements are obtained.

A traffic signal is proposed at the Prospect Street and E. Broad Street intersection (#14). The AM and PM peak hour LOS's are improved from E and F, respectively to LOS C with this mitigation recommendation. ***No cost estimate was provided for this recommended mitigation project.***

However, my recommendation at this intersection is rather than installation of a traffic signal, simply change the northbound Prospect St. approach to **RIGHT TURN ONLY**, matching the recently implemented southbound Prospect St. traffic control. The current and projected 40 -42 northbound thru vehicles/hour would turn right to eastbound E. Broad St. and then left at Elm St. to continue north. This would eliminate the vehicle conflicts with E. Broad St. north side pedestrians crossing Prospect St. and with pedestrians crossing E. Broad St. on the west side of Prospect St. The 2022 existing and 2027 forecast No-Build and Build condition AM and PM peak hour left turns at this northbound approach vary from 5 to 26 vehicles / hour and would reroute to the west via right turns from E. Broad Street south to Elm Street and then west to North Avenue. ***A LOS analysis of this alternative and much less costly mitigation would be beneficial.***

One surprise that I found in the Appendix F worksheets was the different traffic signal cycle time lengths at the adjacent Central Ave. intersections of North and South Avenues (#s 13 & 7), the former 70 seconds and the latter 95 seconds. I believe that the two intersections should be coordinated with the same cycle lengths. At the November 28th meeting I asked if the two intersection traffic signals would be included in the mitigation recommendations. The response was that the South Ave. signal was installed by the County, the North Ave. signal by the State DOT (SR 28), and that this was "complicated." I was subsequently advised by a contact at Union County that both signals are maintained by the Town of Westfield so that the Town should be able to improve the signal timing and coordination.

Upon reading further, I found that the Appendix G, Intersection Capacity Analysis Alternative Worksheets, 2027 "Build with Mitigation Alternatives" addressed this concern, as described below and shown in the attached table.

Pages 811 – 925 - Appendix G TABLES, Intersection Capacity Analysis Alternative Worksheets

Page 812 - ID #3. Route 28 & South Avenue – Alternative 2

This alternative comprised adding a lane to the eastbound South Ave. approach to the Roundabout's northbound exit, requiring NJDOT review and approval. ***No cost estimate or cost sharing estimates were provided.***

Pages 832 – 846 - Intersection ID #7. Ross Place & Central Avenue & South Avenue – Cycle Length / Remove Westbound Right-Turn

The first alternative simply increases the traffic signal cycle length from 95 seconds to 100 seconds and prohibits right turns on red from the westbound South Ave. approach. Pedestrian crosswalk and signal improvements are included. ***These low- cost improvements could be made now upon Town approval.***

The second alternative removes the westbound right turn lane to improve pedestrian safety at this South Ave. crosswalk. It results in a LOS of E in the westbound South Ave. approach during weekday PM peak hours. ***Again, the change could be implemented now upon Town approval.***

Page 848 - Intersection ID #11. Route 28/Broad Street & North Avenue – Remove / Narrow Eastbound Right – Turn Slip Lane

Both alternatives discussed involve relatively low-cost traffic control sign, signal and pavement marking improvements which could be implemented now upon Town approval.

Page 858 - Intersection ID # 13. Central Avenue & North Avenue – Cycle Length / Construct a Westbound Left Turn Lane

Simply modifying the traffic signal timing to a 100 second cycle length and adding improved pedestrian crosswalks and pedestrian signals could be implemented now, again at relatively low cost.

Addition of a westbound North Ave. left turn lane will require costly right-of-way acquisition or reduced North Ave. sidewalk widths, unlikely to be a desired “walkable community” change.

I did not find an Appendix G worksheet for just a change from a 70 second to 100 second cycle length. This traffic signal timing change and coordination with the Central Ave. / South Ave. traffic signal could be implemented now upon Town approval.

Page 868 - Road Diet

Pages 869 – 925 – South and North Avenue Intersections, Single Eastbound & Westbound Thru Lanes

These worksheets show the LOS results at the South Avenue & Summit Avenue, South Avenue & Boulevard, and South Avenue / Eastern South Site Driveway Intersections. The eastbound and westbound South Avenue approaches have a left turn lane and single thru lane, the Summit Avenue and Eastern Driveway traffic signals have 95 second cycle lengths. The only LOS E is shown at the northbound Summit Avenue approach (entering the train station parking area) during the AM peak hour. All other intersection approaches were at LOS D or better.

I was surprised that a 95 second traffic signal cycle length was used at these South Avenue intersections rather than 100 seconds used at South Avenue and Central Avenue.

The North Avenue intersections at Elm Street and at Central Avenue are analyzed under the conditions of single eastbound and westbound North Avenue through lanes and separate left turn lanes. Traffic signal cycle lengths of 100 seconds are shown. LOS's of E are shown for the eastbound lane approach to Central Avenue during AM peak hours and F for the eastbound North Avenue and northbound Central Avenue approaches during the PM peak hours. ***The resulting North Avenue eastbound average through lane queue length is over 500 feet, extending back past the proposed parking garage exit driveway!***

Page 926 – APPENDIX H, Intersection/Location Improvement Concepts

Page 927 – Multi- Use Trail from South Avenue to North Avenue Under NJ Transit Railroad Bridge.

An improved pedestrian crosswalk at the Eastbound slip ramp from North Avenue to the south should be included in this concept drawing. (See page 931 for this mitigation proposal).

Has a cost estimate been prepared for this proposed improvement?

Page 928 – South Avenue Improvements

An eastbound right turn lane at the improved signalized intersection of South Avenue West and Summit Avenue should be considered.

Have cost estimates been prepared for these proposed improvements?

Page 929 – Proposed Ross Place & Central Avenue & South Avenue

This concept drawing shows the alternative which retains the westbound South Avenue right turn lane. A second concept drawing showing the alternative that removes this lane and provides a shorter pedestrian crosswalk at this approach would be helpful.

Again, has a cost estimate been prepared for these alternative concepts?

Page 930 – Proposed Clark Street & North Avenue

Has a cost estimate been prepared for this proposed improvement?

Page 931 – Route 28/E. Broad Street & North Avenue

The improved pedestrian crosswalk and additional traffic calming measures to be evaluated at the eastbound slip ramp from North Avenue answers my previous question about this location's recommended improvements. More specificity about traffic calming measures would be helpful.

Again, cost estimates?

Page 932 – Proposed North Avenue & Elm Street Parking Lot Changes.

A well-designed concept plan for this intersection and NJ Transit Station access/egress vehicle circulation.

A cost estimate?

Page 933 – Proposed Central Avenue & North Avenue

The close proximity of the right turn only parking garage driveway to Central Avenue is problematic.

A cost estimate?

Page 934 – Proposed Prospect Street & E. Broad St.

A simple alternative to this new traffic signal installation is to prohibit left turns and thru traffic movements at the northbound Prospect Street approach, as I've stated previously.

Has a cost estimate been prepared for the traffic signal installation?

Page 936 – Appendix I, Westfield Roundabout Memo

Recommended Alternative 2, described on pages 937 and 939 and shown in Exhibit 3, page 943 could be implemented now. NJ DOT State and Federal infrastructure funds should be available for this.

A cost estimate?

